FIG. 1 (CONVENTIONAL ART)

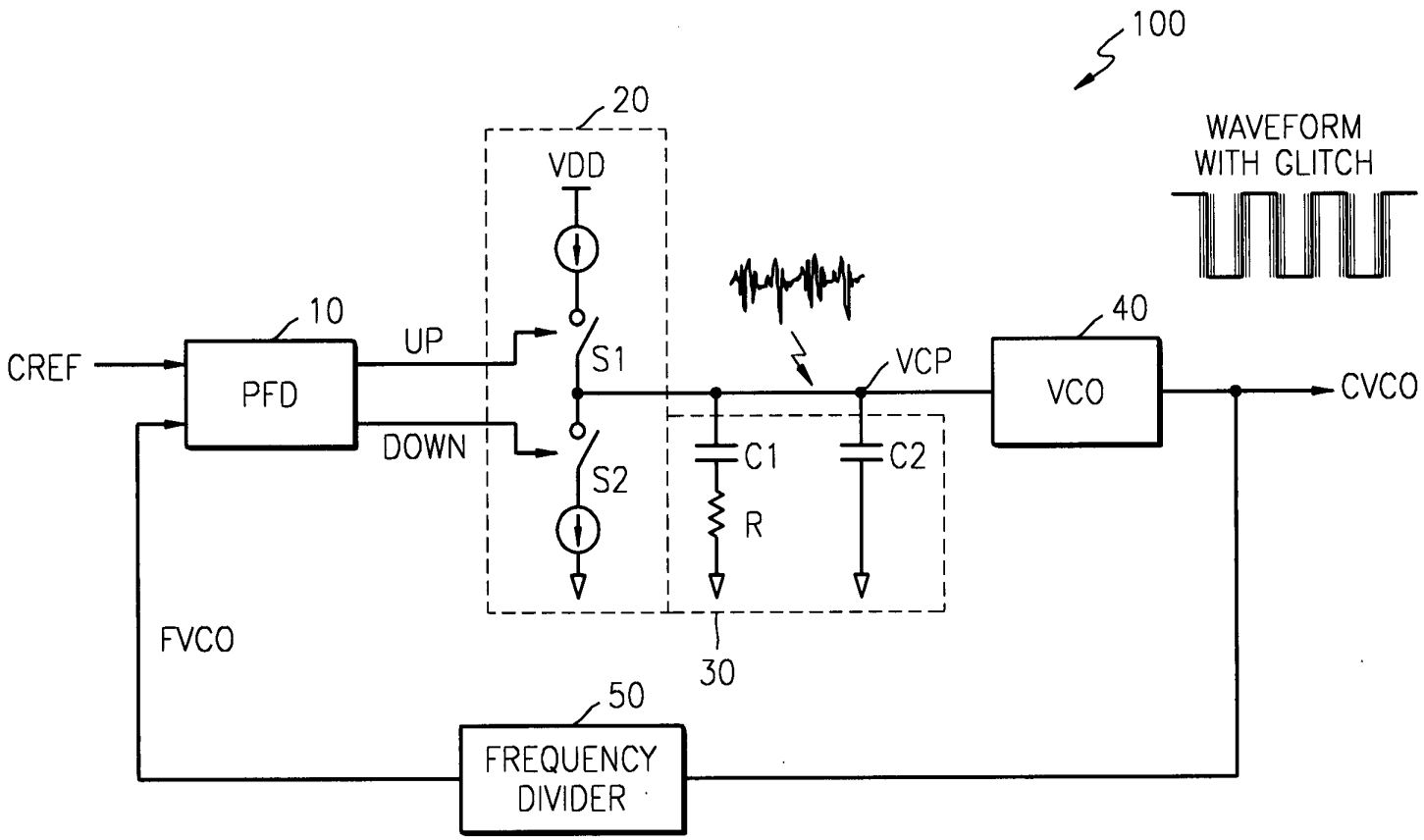


FIG. 2

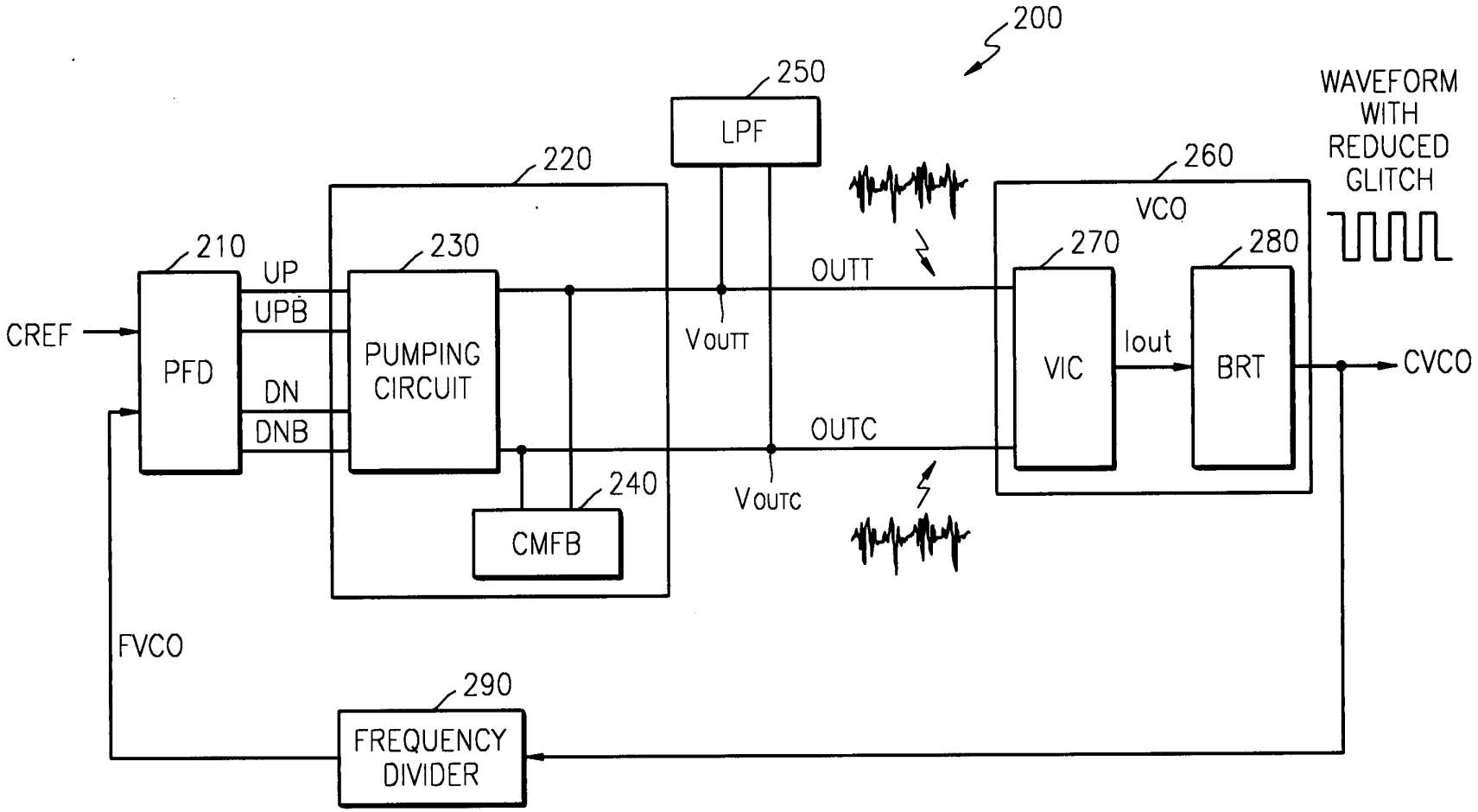

200
250
LPF
220
260
VCO
WAVEFORM WITH REDUCED GLITCH
210
230
270
280
UP
UPB
DN
DNB
OUTT
OUTC
CREF
PFD
PUMPING CIRCUIT
VOUTT
VOUTC
VIC
Iout
BRT
CVCO
240
CMFB
FVCO
290
FREQUENCY DIVIDER

FIG. 3

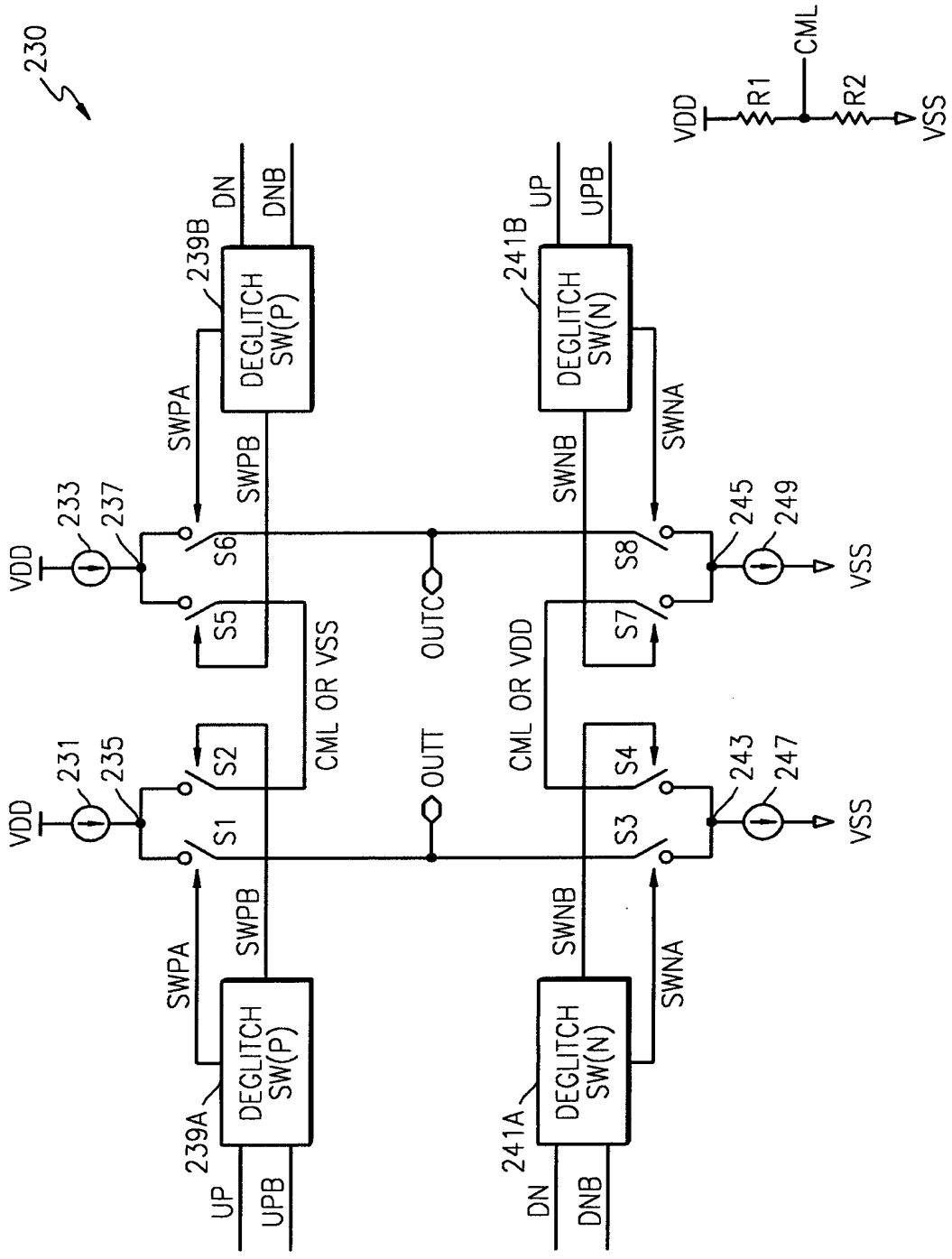

230
VDD
R1
CML
R2
VSS
239B
DEGLITCH SW(P)
DN
DNB
241B
DEGLITCH SW(N)
UP
UPB
SWPA
SWPB
SWNB
SWNA
233
237
231
235
245
249
243
247
S1
S2
S3
S4
S5
S6
S7
S8
CML OR VSS
CML OR VDD
OUTT
OUTC
239A
241A

FIG. 4

UP	0(=LOW)	1(=HIGH)	DN	0	1
S1	OFF	ON	S3	OFF	ON
S2	ON	OFF	S4	ON	OFF
S7	ON	OFF	S5	ON	OFF
S8	OFF	ON	S6	OFF	ON

FIG. 5

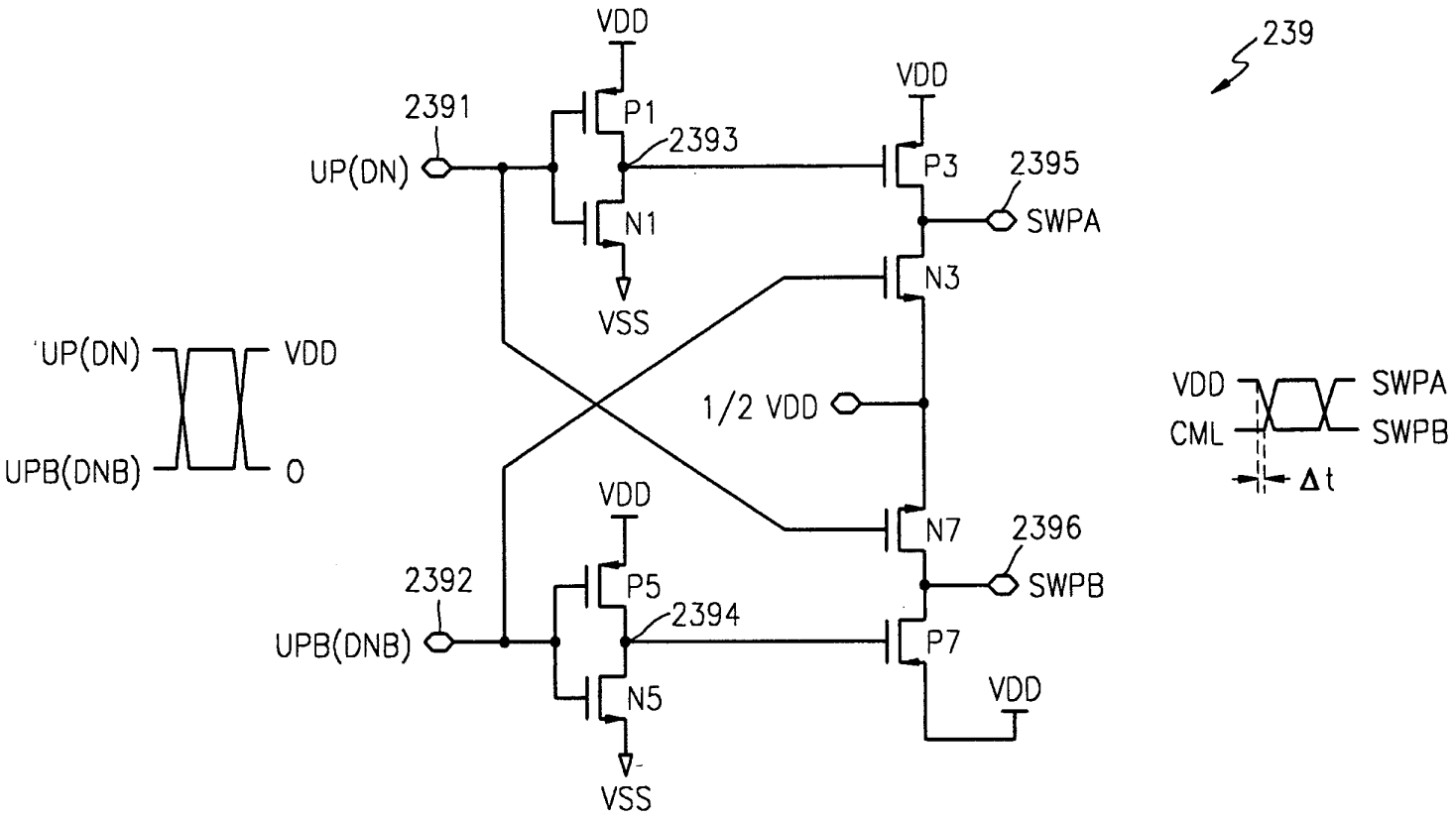

239
VDD
2391
P1
2393
VDD
P3
2395
UP(DN)
N1
SWPA
VSS
N3
UP(DN)
VDD
1/2 VDD
UPB(DNB)
0
VDD
SWPA
CML
SWPB
Δt
VDD
N7
2396
2392
P5
SWPB
2394
UPB(DNB)
P7
N5
VDD
VSS

FIG. 6

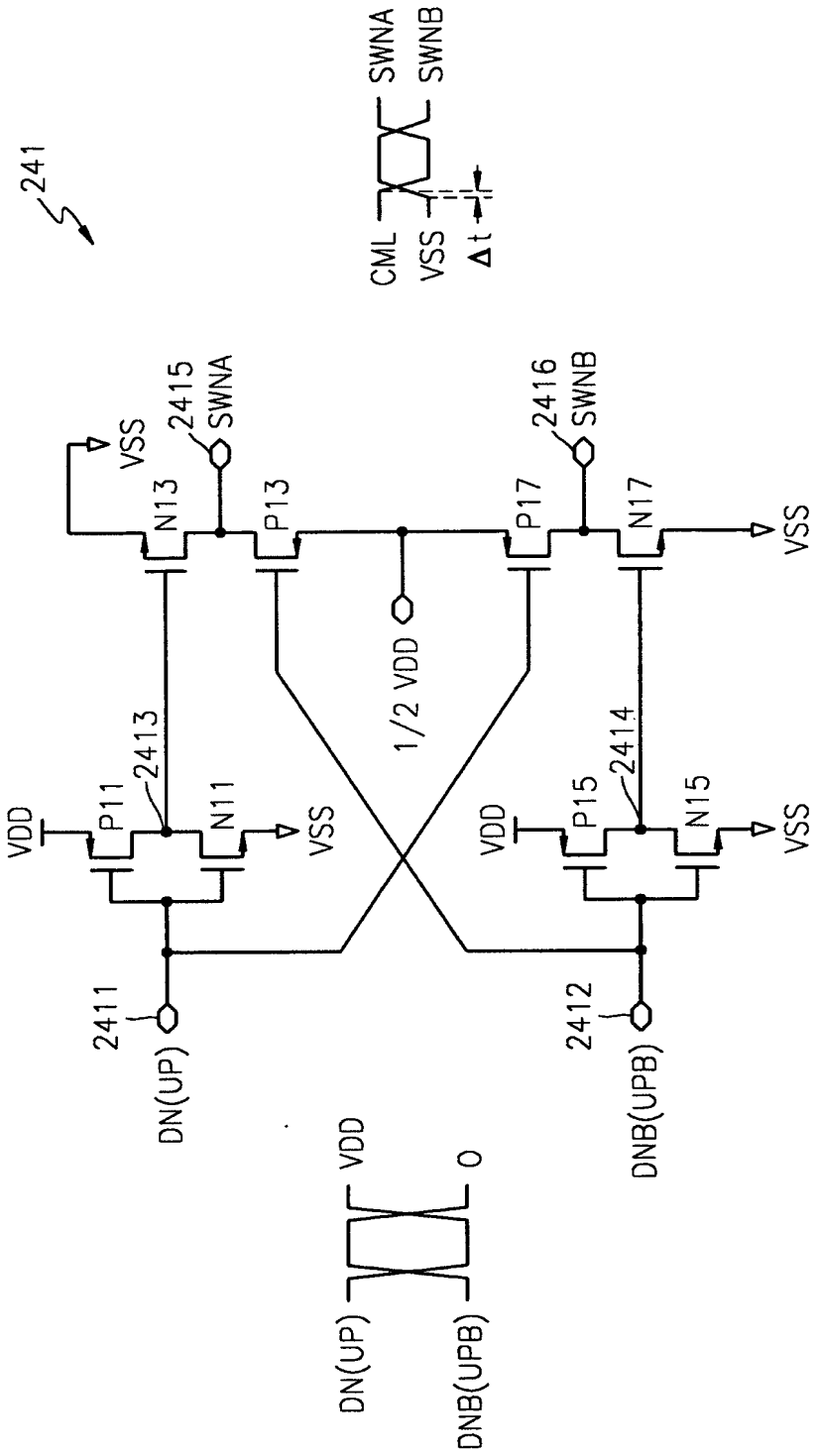

241
CML
VSS
Δt
SWNA
SWNB
VDD
P11
2413
N11
VSS
2411
DN(UP)
VSS
2415
SWNA
N13
P13
1/2 VDD
P17
2416
SWNB
N17
VSS
VDD
P15
2414
N15
VSS
2412
DNB(UPB)
VDD
0
DN(UP)
DNB(UPB)

FIG. 7A

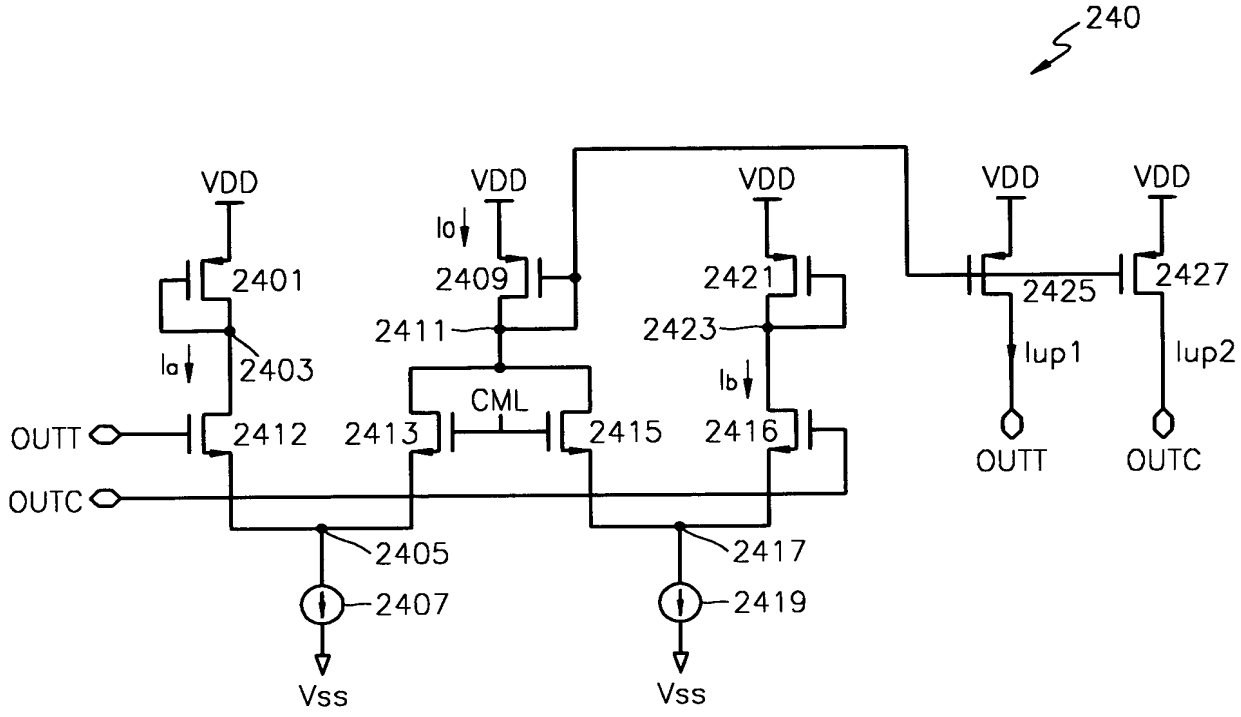

240
VDD
VDD
VDD
VDD
VDD
Io
2401
2409
2421
2425
2427
2411
2423
Ia
2403
Ib
Iup1
Iup2
CML
OUTT
2412
2413
2415
2416
OUTT
OUTC
OUTC
2405
2417
2407
2419
Vss
Vss

FIG. 7B

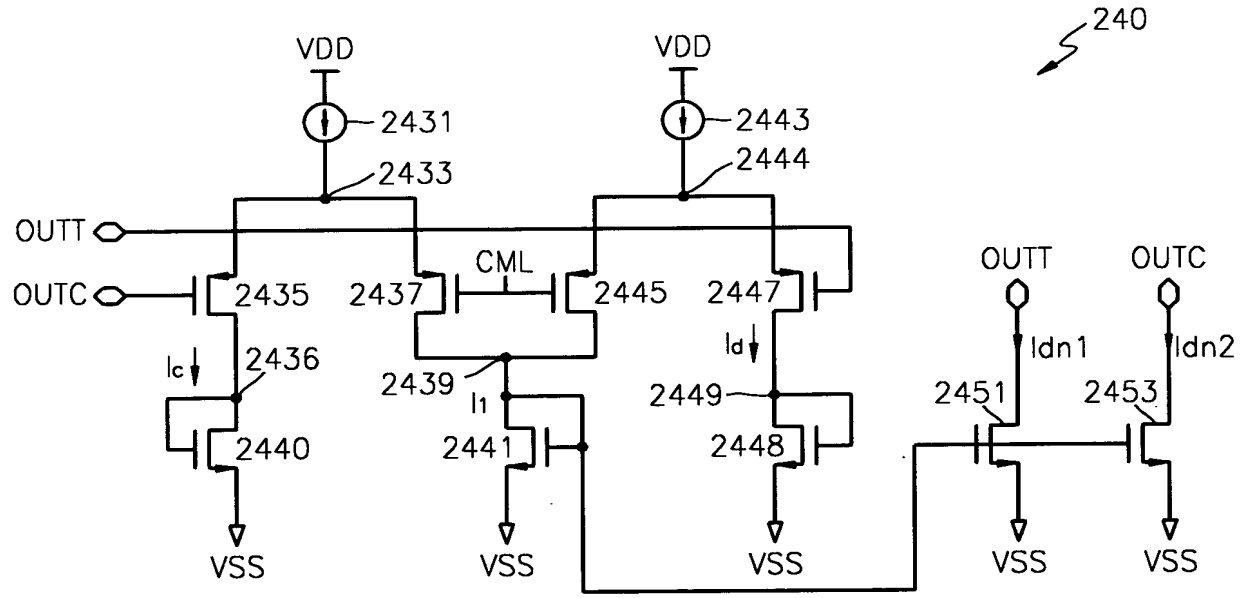
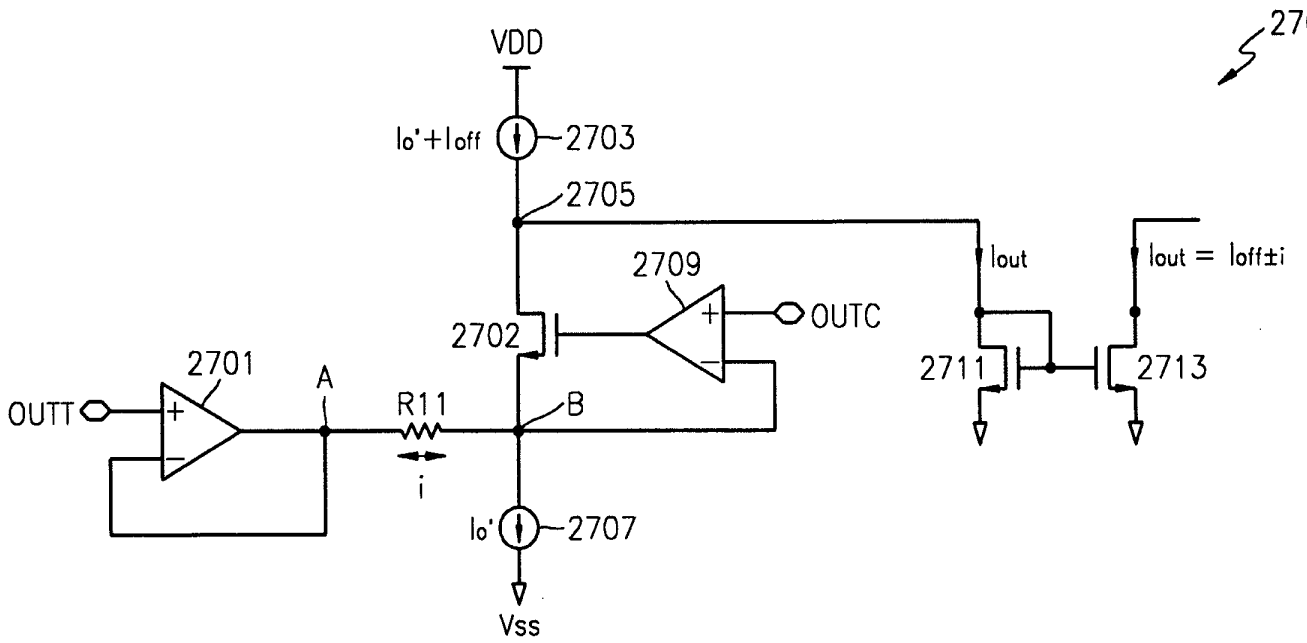

240
VDD
VDD
2431
2443
2433
2444
OUTT
CML
OUTT
OUTC
OUTC
2435
2437
2445
2447
Ic
2436
Id
Idn1
Idn2
2439
I1
2449
2451
2453
2440
2441
2448
VSS
VSS
VSS
VSS
VSS

FIG. 8


270
VDD
Io'+Ioff
2703
2705
2709
OUTC
2702
Iout
Iout = Ioff±i
2701
A
OUTT
R11
B
2711
2713
i
Io'
2707
Vss